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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,082	01/24/2001	George Stephen Mecherle	258/237	6427

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EXAMINER

SINGH, DALZID E

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 02/25/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/769,082

Applicant(s)

MECHERLE ET AL.

Examiner

Dalzid Singh

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 107-122 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 107, 109, 110, 112-116 and 122 is/are rejected.
- 7) ☒ Claim(s) 108, 111 and 117-121 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 107, 109, 110, 112-116 and 122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nourrcier (US Patent No. 5,150,372) in view of Suzuki (US Patent No. 3,939,435).

Regarding claim 107, Nourrcier discloses power supply for laser comprising:
providing a wideband input signal (see col. 3, lines 1-2, radio frequency (rf) driven laser, which operate at frequency of 150MHz, which is a wideband signal);
providing a power amplifier to drive a laser diode (see col. 3, lines 60-63, Nourrcier teaches that power amplifier drives the laser diode);

generating a wideband output current from the wideband input signal to modulate the laser diode (since the input signal is wideband, therefore the output signal generated will by an amplified wideband signal to drive the laser diode); and,

operating the power amplifier as a voltage-controlled current driver for the laser diode (since the power amplifier is connected to the laser diode and amplifies or controls the voltage of the drive signal, which is a current signal, the power amplifier can be considered as voltage-controlled current driver).

Nourrcier disclose power amplifier coupled to the laser diode as discussed above and differs from this claim in that Nourrcier does not specifically teaches that the power amplifier has low output impedance. However, it is well known that a power amplifier with low output impedance is desired in order to match low input impedance laser diode. Such power amplifier with low output impedance is taught by Suzuki (see col. 3, lines 13-18). Therefore it would have been obvious to an artisan of ordinary skill in the art to provide a low output impedance power amplifier to drive a laser diode, which eliminates the use of impedance matching circuitries. The motivation of providing such is to eliminate power loss caused by impedance matching circuitries and further reduce cost of manufacturing.

Regarding claim 109, the combination of Nourrcier and Suzuki teaches that the input signal is characterized by a rate of at least 10 Mbits/second (see col. 3, lines 57-60) and differ from this claim in that the combination does not specifically teach that the power amplifier provides output current of at least 100 mA to the laser diode. However, as shown in Fig. 1, the control unit (16) is used to control current going to the laser through VCO (26). Since the input signal current going to VCO is adjustable, therefore it would have been obvious to an artisan at the time of the invention to adjust the output current to the laser to be at least 100mA.

Regarding claim 110, Nourrcier disclose as described in claim 107, the power amplifier is operated as a voltage-controlled current source by DC biasing the power amplifier with a gate voltage to provide linear modulation of the laser drive current (see

col. 4, lines 7-19, Nourrcier teaches adjusting the DC bias to control signal drive going to the power amplifier of the laser diode).

Regarding claim 112, since the current level is varied therefore, the output power of the laser driver is adaptive (see claim 109).

Regarding claims 113, as discussed in claim 110 and in col. 4, lines 27-55, Nourrcier teaches that the laser output is controlled by applying a sweep pulse (which is in multiple discrete steps).

Regarding claim 114, in col. 4, lines 7-65, Nourrcier teaches that the input signal controlling the laser output power is accomplished by simultaneously controlling the power amplifier gate bias voltage, bias current of the laser diode, and modulation current of the laser diode using an input signal (the control signal control the VCO which provides drive signal to the power amplifier and the laser diode).

Regarding claims 115, as discussed in claim 110 and in col. 4, lines 27-55, Nourrcier teaches that the laser output is controlled by applying a sweep pulse (which is in multiple discrete steps) and differs from this claim in that Nourrcier does not specifically teach that the digital input signal is characterized by at least 2 bits. However, as discussed above, the input signal is controlled by a sweep pulse. Since the sweep pulse is digital, therefore it would have been matter of design choice to adjust the pulse to be at least 2 bits.

Regarding claim 116, the combination of Nourrcier and Suzuki differs from this claim in that the combination does not specifically disclose an attenuator used to attenuate the modulation signal. However it would have been obvious to an artisan of

ordinary skill in the art to provide attenuator to attenuate the signal. The motivation of providing such is to control fluctuation of input signal level.

Regarding claim 122, as discussed in col. 3, lines 55-68 to col. 4, lines 1-65, it appears that Nourrcier teaches monitoring current of the laser diode.

Allowable Subject Matter

3. Claims 108, 111 and 117-121 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments with respect to claims 107-122 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is 703-306-5619. The examiner can normally be reached on Mon-Fri 8am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
February 20, 2004



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